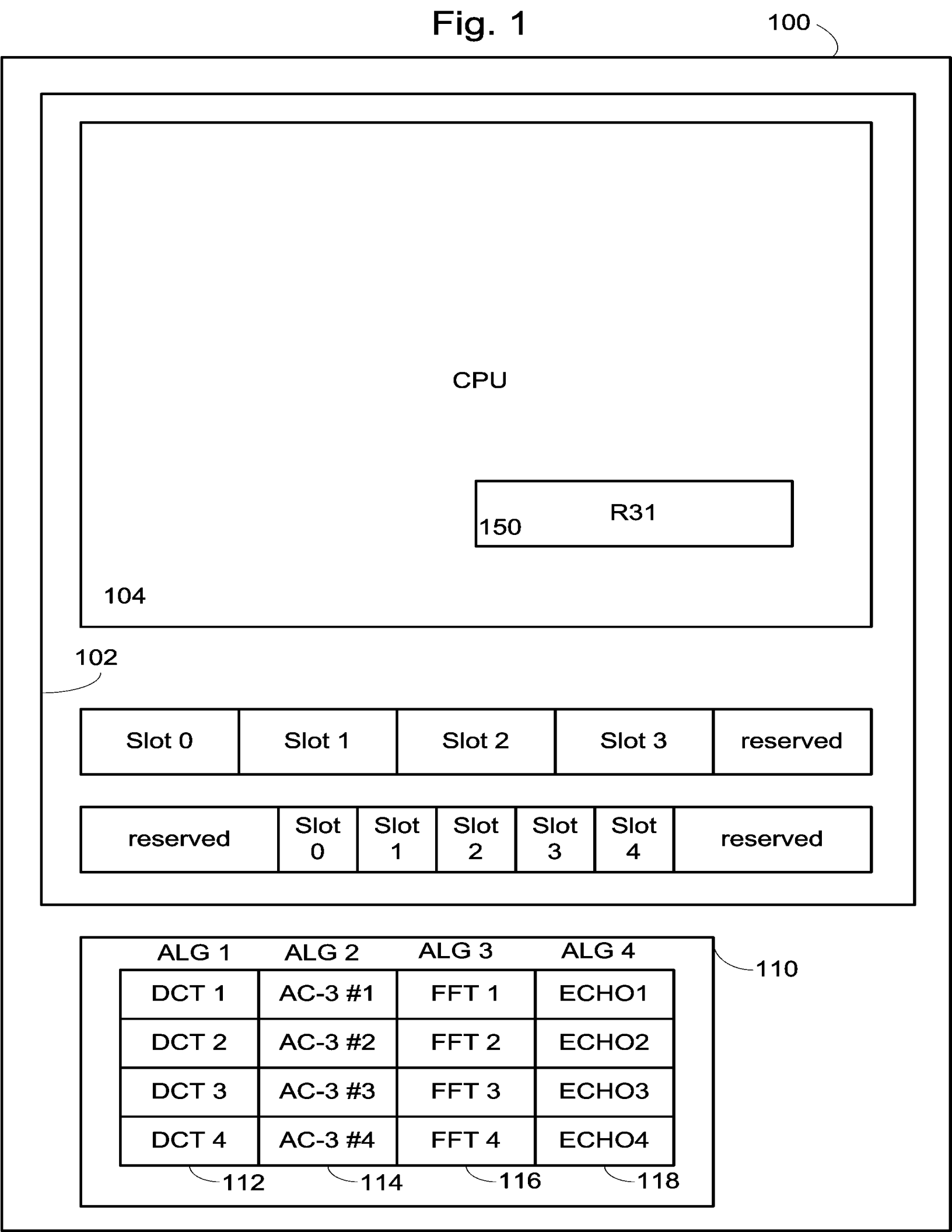
Fig. 1


100
CPU
R31
150
104
102
Slot 0
Slot 1
Slot 2
Slot 3
reserved
reserved
Slot 0
Slot 1
Slot 2
Slot 3
Slot 4
reserved
ALG 1
ALG 2
ALG 3
ALG 4
DCT 1
AC-3 #1
FFT 1
ECHO1
DCT 2
AC-3 #2
FFT 2
ECHO2
DCT 3
AC-3 #3
FFT 3
ECHO3
DCT 4
AC-3 #4
FFT 4
ECHO4
110
112
114
116
118

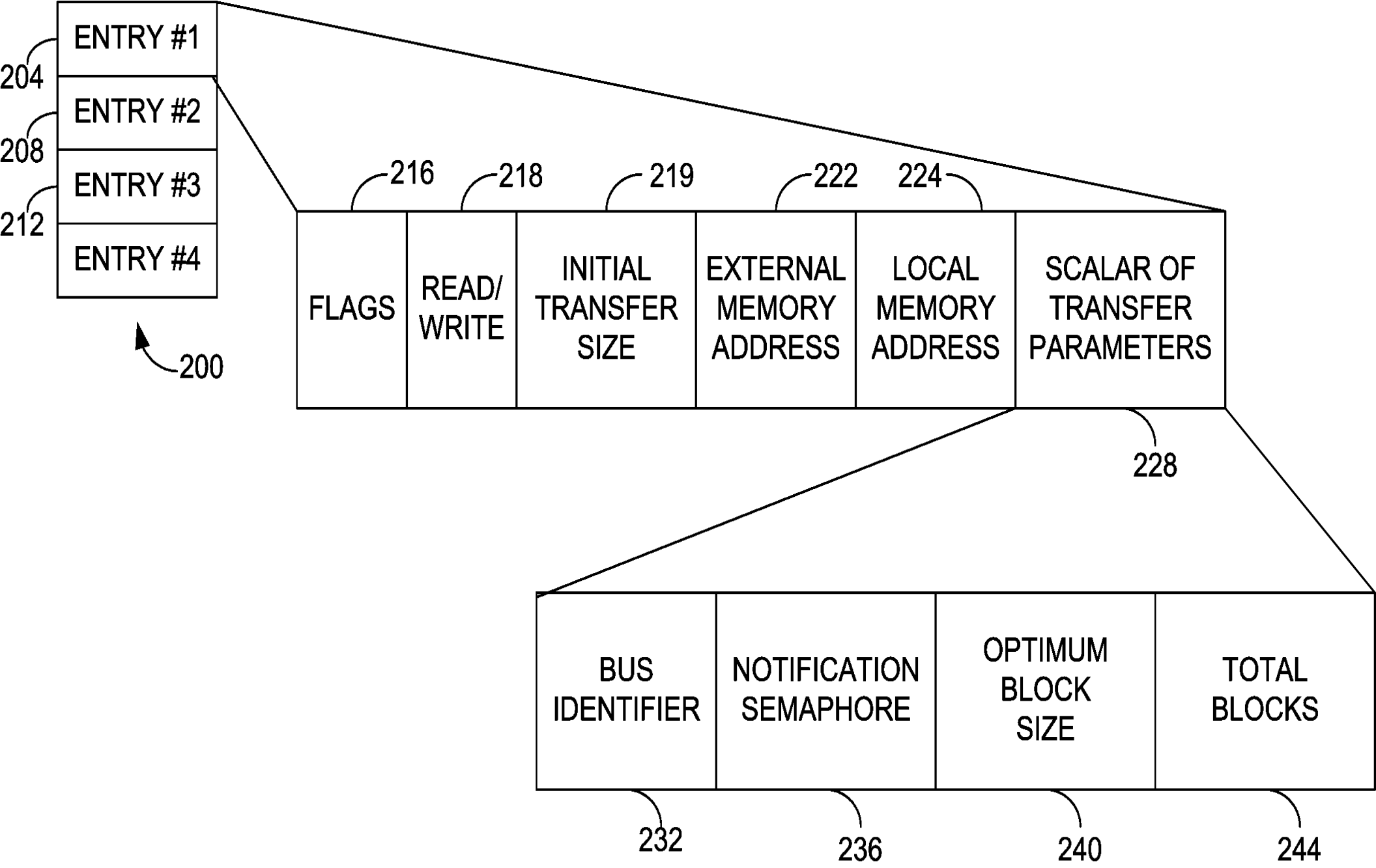

ENTRY #1
ENTRY #2
ENTRY #3
ENTRY #4
204
208
212
200
216
218
219
222
224
FLAGS
READ/ WRITE
INITIAL TRANSFER SIZE
EXTERNAL MEMORY ADDRESS
LOCAL MEMORY ADDRESS
SCALAR OF TRANSFER PARAMETERS
228
BUS IDENTIFIER
NOTIFICATION SEMAPHORE
OPTIMUM BLOCK SIZE
TOTAL BLOCKS
232
236
240
244

Fig. 2

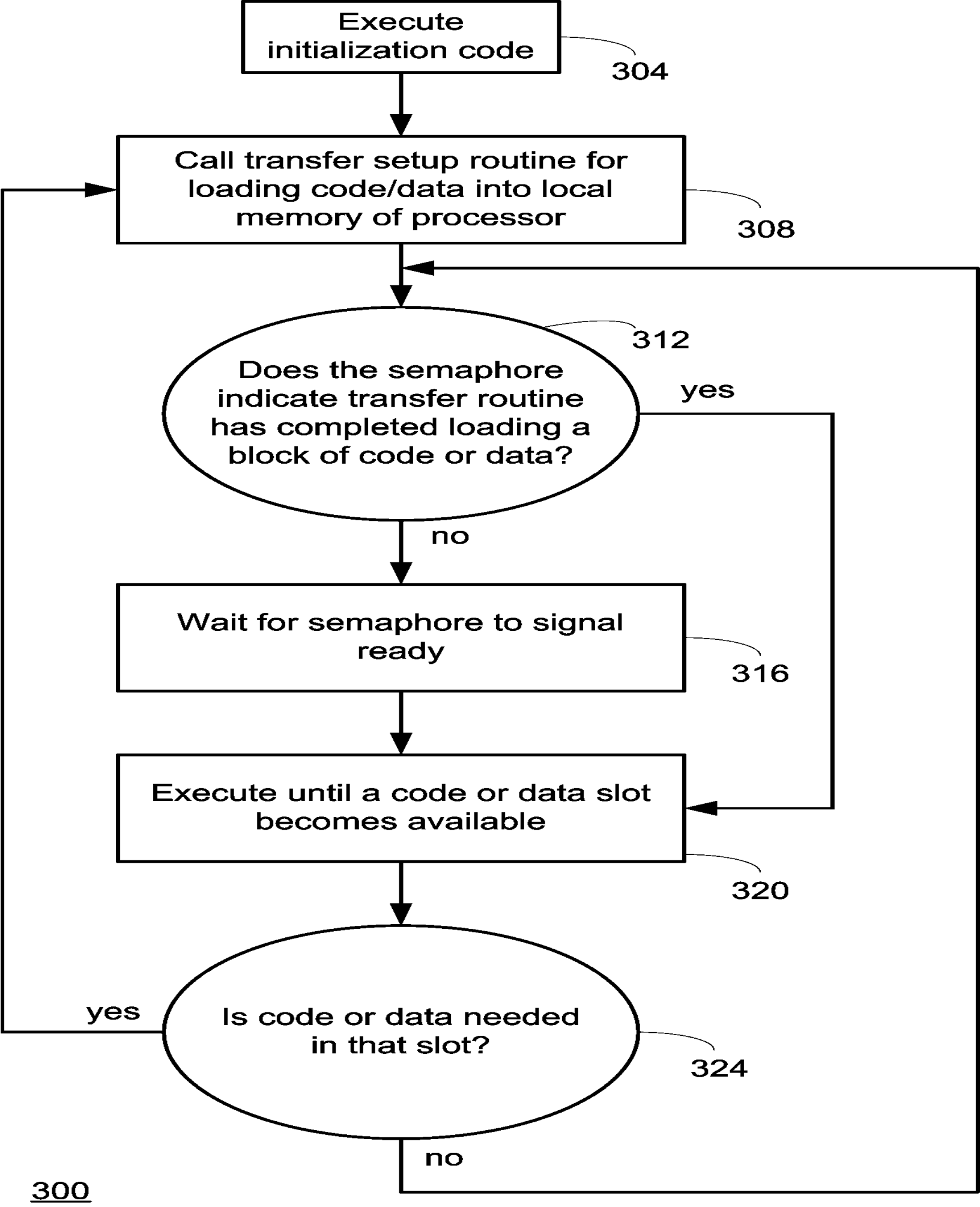

Execute initialization code
304
Call transfer setup routine for loading code/data into local memory of processor
308
312
Does the semaphore indicate transfer routine has completed loading a block of code or data?
yes
no
Wait for semaphore to signal ready
316
Execute until a code or data slot becomes available
320
Is code or data needed in that slot?
yes
324
no
300

Fig. 3A

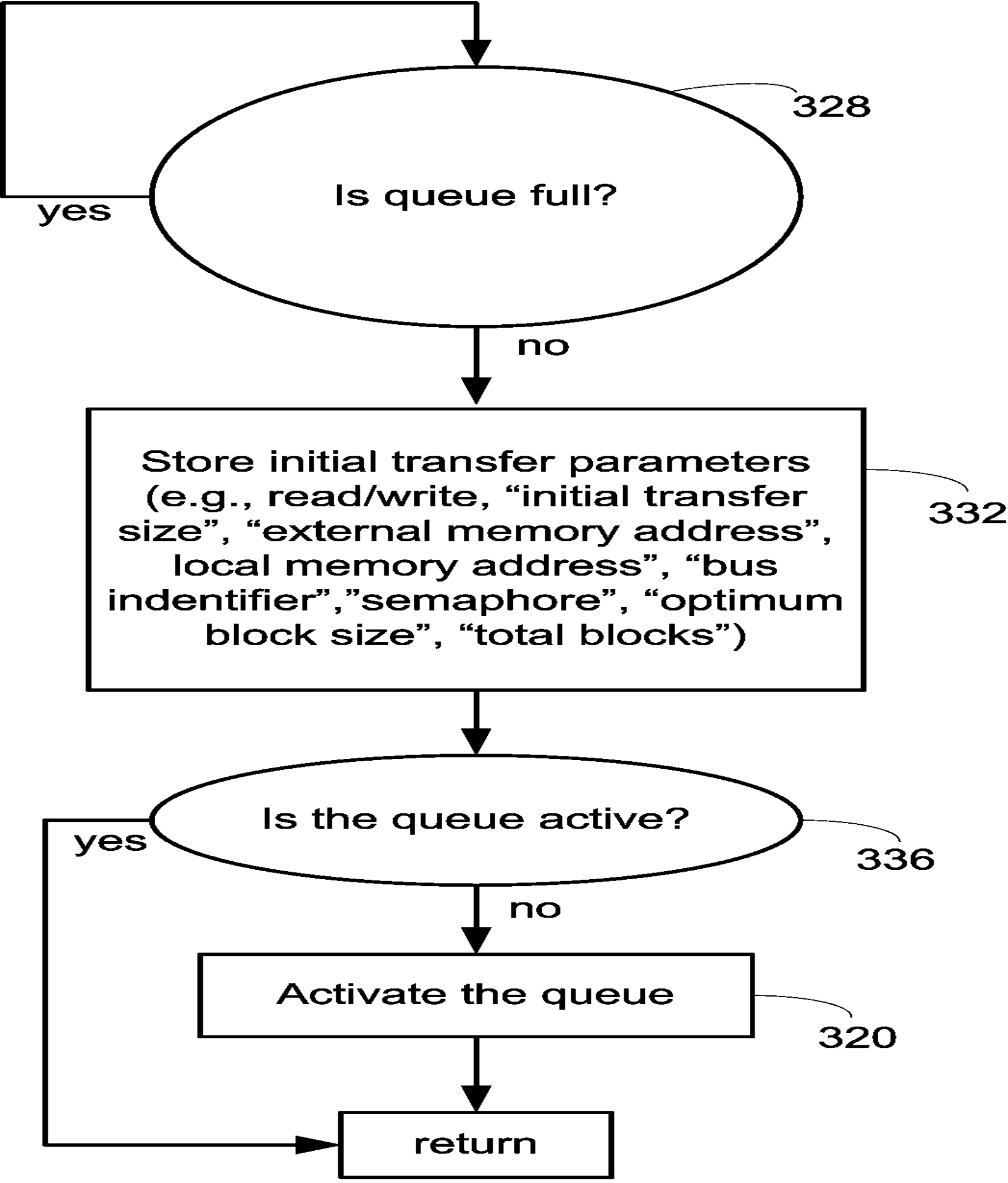

328
Is queue full?
yes
no
Store initial transfer parameters (e.g., read/write, “initial transfer size”, “external memory address”, local memory address”, “bus indentifier”,”semaphore”, “optimum block size”, “total blocks”)
332
Is the queue active?
yes
336
no
Activate the queue
320
return

Fig. 3B

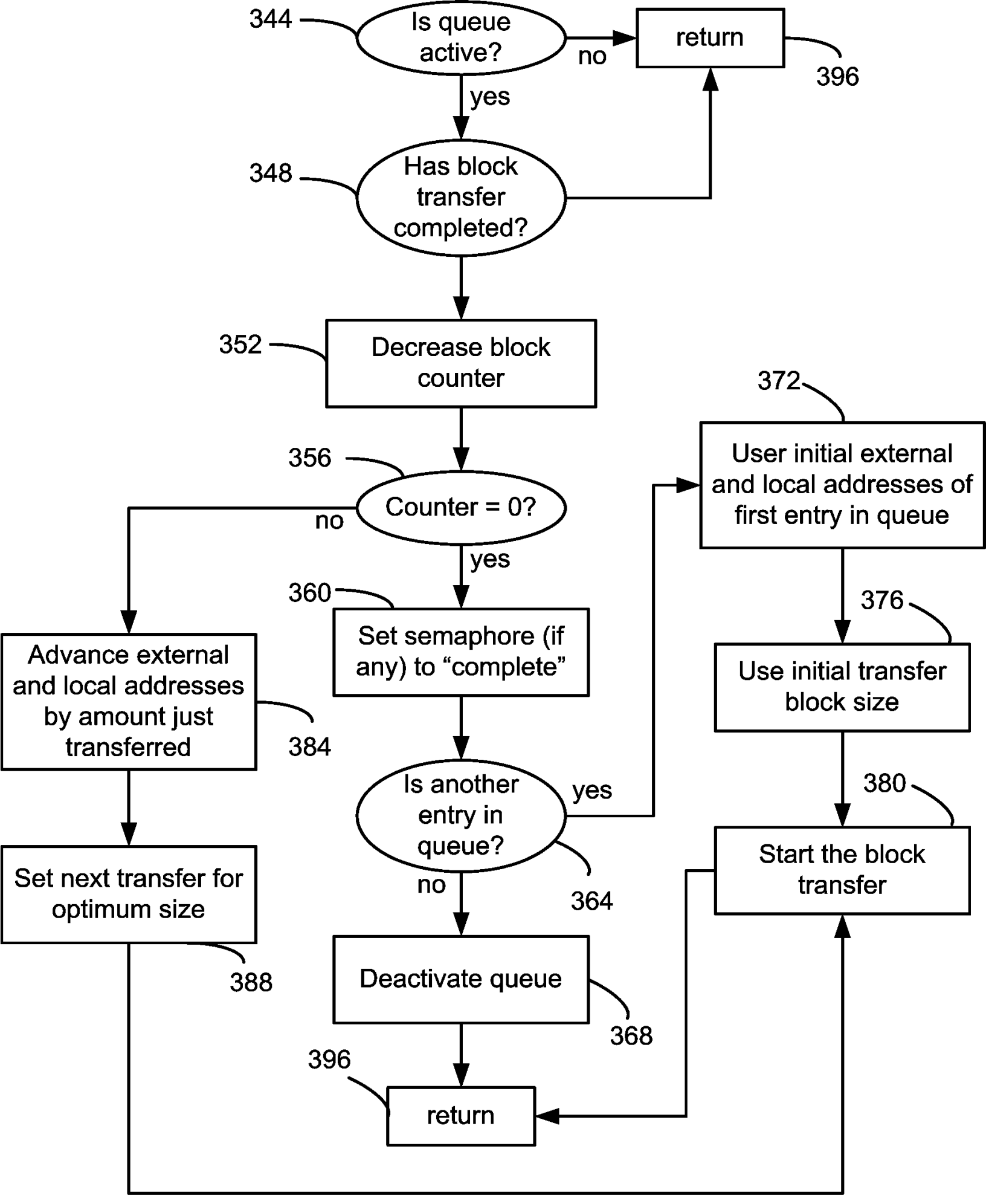

344
Is queue active?
no
return
396
yes
348
Has block transfer completed?
352
Decrease block counter
372
User initial external and local addresses of first entry in queue
356
Counter = 0?
no
yes
360
Set semaphore (if any) to "complete"
376
Use initial transfer block size
Advance external and local addresses by amount just transferred
384
Is another entry in queue?
yes
380
Start the block transfer
Set next transfer for optimum size
388
no
364
Deactivate queue
368
396
return

Fig. 3C

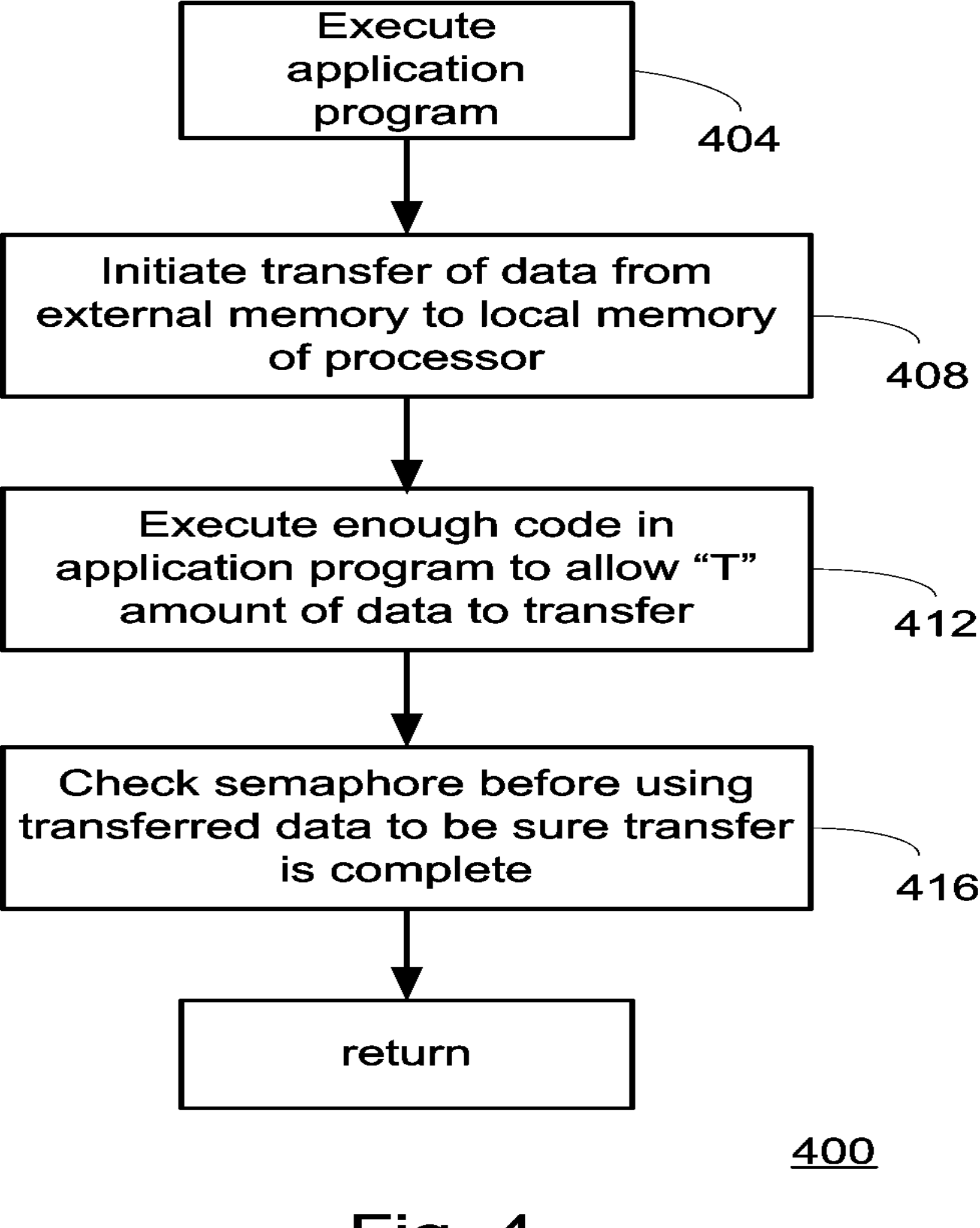

Execute application program
404
Initiate transfer of data from external memory to local memory of processor
408
Execute enough code in application program to allow "T" amount of data to transfer
412
Check semaphore before using transferred data to be sure transfer is complete
416
return
400

Fig. 4

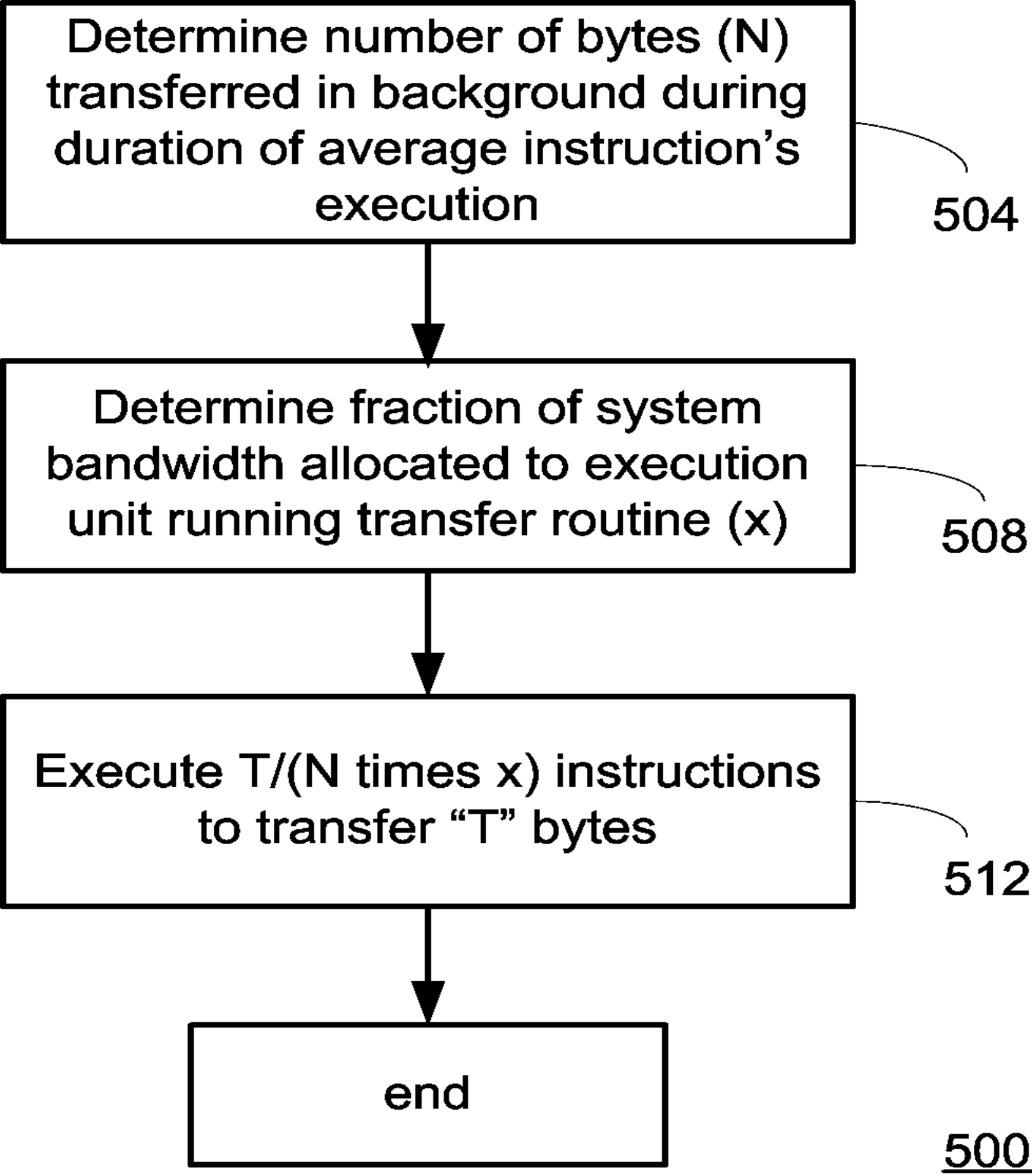

Determine number of bytes (N) transferred in background during duration of average instruction's execution
504
Determine fraction of system bandwidth allocated to execution unit running transfer routine (x)
508
Execute T/(N times x) instructions to transfer "T" bytes
512
end
500

Fig. 5